PLEASE

TABLE OF CONTENTS

Introduction to PLEASE	2
General Operating Instructions	3
Cassette Tape Loading Instructions	4
Program Overview	5
Program Module #1	
Set Timer	6
Display Timer	6
Set Clock	7
Display Clock	7
Notice	8
Billboard	8
Daffy	9
Program Module #2	
Shooting Stars	10
HiLo Number Guessing Game	11
Program Module #3	
Tipsy	12
Program Module #4	
Decimal/Hex Conversion	13
Hex/Decimal Conversion	13
Program Module #5	
Add/Subtract	14
React	15
Character Generator Table	14
Command Summary Chart	Back Cover
Some Important Numbers	Back Cover

INSTRUCTIONS

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General Operating Instructions

Getting Started.

The PLEASE Package is divided into a number of components which are stored separately on the cassette tape.

Conceptually, the PLEASE Package is divided into four major components;

1. KIM-1 Monitor
2. PLEASE Executive
3. PLEASE Functions
4. PLEASE Programs

In order to run a PLEASE program, all four components must be in the machine. The KIM-1 Monitor is in ROM and is always "in the machine". The PLEASE Executive resides in locations 1780 through 17E6 which is the "extra" RAM on the 6530 chips. This must be loaded from the cassette tape each time the system is powered up. It is the first program on the tape.

The PLEASE Functions reside in locations 200 through 3FF. These must be loaded from the tape, and are required for all of the programs.

The PLEASE Programs reside in locations 00 through 9F. Locations A0 through AF contain a table which decodes commands and is used to select which of several resident programs to run. Locations B0 through EE are used for a variety of PLEASE storage areas and are described elsewhere. The PLEASE Function table is in locations 100 through 11F. Special Functions have a table in locations 120 through 12F. Special Functions are located in locations 130 through 1EF. This section of memory must be filled from the cassette tape and changes from one collection of programs to another. In some instances, only the PLEASE Programs are changed and only locations 00-9F must be overlayed. Other programs require the overlaying of locations 00 through 1FF.

Load the Executive, PLEASE, and the Program Module you wish to run, following the instructions on page 4.

To start PLEASE, Set Address 178Ø and press "GO".

You are now in the Command Decoder which is waiting for a Command. A Command is issued by typing at least the first two characters of the Program Name and then pressing the "GO" key. For example, to run the STIMER (Set TIMER) program, type "S","T", and "GO". If STIMER has been properly loaded, it will be run. If it is not loaded, then you will remain in the Command Decoder until you issue a valid command. Once you start typing a command you can abort it, before typing "GO", by typing "PC" which will clear the Display and Command Buffer.

NOTE: The Command Decoder may be restarted at any time by pressing the "RS" (ReSet) key, setting the address to 178Ø if not the default, and then pressing the "GO" key.

Cassette Tape Loading Instructions

The reader is assumed to know how to load cassette tapes on the KIM-1. The section covers the specifics of loading PLEASE from the cassette tapes provided with the PLEASE Package.

Tape Layout

The tape contains two copies of each PLEASE module. Each set of modules consists of the individual modules with a ten second gap between them. The tape was written directly from a KIM-1 using a variation of a program called Hypertape which was developed by Jim Butterfield and may be found in "The First Book of KIM". (Available from ORB, P.O. Box 311, Argonne, Il 60439 for $9.00) Hypertape produces tapes that are written at higher speeds than the standard KIM-1 tapes, but which are compatible and can be read using the standard KIM-1 Monitor. The first set of PLEASE modules is written at six times the standard rate and the second set at three times the standard rate. In addition to the PLEASE modules, there is a section of SYNC characters which may be of use in adjusting your cassette recorder. If you have a reasonably good cassette unit you should be able to use the first, highest speed, version. The lower speed is included for anyone whose tape system is marginal. If even the slower speed does not work with your equipment, then you have a problem. Best bet is to get another recorder and/or have the head alignment checked on your unit. Some units may be "too good" for these tapes. The equalization characteristics of tape recorders varies. Some of the better ones seem to have trouble reading tapes written on cheaper units.

The sequence of the modules on tape for each set is:

Module	Tape ID Number
Executive	10
Timer/Clock/Notice/Billboard/Daffy	01
Shooting Stars/Hi-Lo	02
Tipsy	03
Decimal/Hex Conversion	04
Adding Machine/Reaction Time	05
1024 SYNCS	80

Bringing Up The System

When starting from scratch, the Executive should be the first module loaded. It loads into locations 1780 to 17E6. The second module loaded should be the Timer/Clock/... #01 which contains all of the PLEASE Functions, System Timer, Interpreter, and so forth, in addition to the PLEASE Programs for the Timer, etc. At this point any program from module #1 can be run. The other program modules can then be loaded when desired. These each overlay part of the first PLEASE module.

Tape Input Instructions

```
Set Address  00F1 to 00  Clears Flags for Tape Loader
Set Address  17F9 to 00  To load NEXT module from tape or
                    ID   Identification Number to get specific module
Set Address  1873 and GO  Start the KIM Tape Input Routine
Start Cassette Recorder.
Display will show 0000 xx when module is loaded.
```

Program Module #1

Contents:

ST	Set Timer	Set Initial Value for Millisecond Timer
DT	Display Timer	Display Millisecond Timer with Continuous Update of Timer
SC	Set Clock	Set Initial Value of 24 Hour Clock
DC	Display Clock	Display 24 Hour Clock with Continuous Update of Clock: Hours, Minutes, Seconds
NO	NOtice	Display an Alphabetic Message Six Characters at a Time
BB	BillBoard	Display an Alphabetic Message Shifting One Character at a Time from Right to Left.
DA	DAffy	A Sophisticated Number Guessing Game (also known as Mastermind)

Program Module #2

SS	Shooting Stars	The Shooting Stars Puzzle
HI	HI-lo	A Simple Number Guessing Game in which the Player tries to guess the number in the range 00 to 99 that the computer picked.

Program Module #3

TI	TIpsy	An Intoxication Tester in which the subject is shown a four digit decimal number for two seconds and after a one second delay tries to type in the number within ten seconds.

Program Module #4

DH	Decimal/Hex	Convert 1 to 6 digit decimal number to its hexidecimal equivalent. Range 00 to 999999.
HD	Hex/Decimal	Convert 1 to 6 digit hexidecimal number to its decimal equivalent. Range 00 to F423F

Program Module #5

AS	Add/Subtract	Six Digit decimal adding machine. Permits additions and subtractions as long as answer is in the range 00 to 999999. Does not permit entry of a number which will cause overflow or a negative result.
RE	REact	Reaction Time Tester. Time taken to react to a change in the Display is calculated and displayed with millisecond accuracy.

Set Timer
Display Timer

Command: ST
Display: blank
Input: 0 to 6 digit decimal number. Will enter as rightmost digit and prior digits will be shifted one position to the left.
Type "PC" to erase value.
Type "+" to set value.
Action: Will automatically drop into the Display Timer Program.

Command: DT
Display: Current Value of the Millisecond Timer will be continuously displayed. The least significant digit displays the current millisecond value, the next digit the hundredths of a second, ..., and the most significant digit hundreds of seconds.

100	10	1	0.1	0.01	0.001	value in seconds
0	1	2	3	4	5	display position

Input: "GO"
Action: Return to PLEASE Command Decoder
or
Input: "+"
Action: Go to Set Timer Program

Notes and Comments:

1. The blank display in Set Timer has a value of all zero's. Therefore, calling ST and then typing "+" will start the Timer at zero. A "+" in the Display Timer restarts the Set Timer, a "+" in Set Timer restarts the Display Timer, so that two successive "+" inputs will restart the Timer at zero.

2. Although the Timer is accurate to a millisecond (give or take a few microseconds), the display appears to show a nine as the least significant (millisecond) digit. This is due to the Display Refresh algorithm, and is instructive in the workings of the dynamic display. Since the refresh moves one digit position each millisecond and there are an even number of digit positions, six, the least significant digit is changing every millisecond but is only displayed every sixth millisecond. This results in only the even or the odd values being displayed! In the Display Timer routine it happens to be the odd values: 1 then 7 then 3 then 9 then 5 then 1 ... if the original millisecond value from Set Timer is even. The segments which are used by the odd digits never use the lower left vertical display segment but do use all of the other segments at least twice. This causes the apparent "9" to be seen as the millisecond digit. If, however, the original millisecond value from Set Timer is odd, then the millisecond digit appears to be an eight. This is due to the fact that the segments used by the even digits are equally distributed and turn on all segments which appears as an eight!

Set Clock
Display Clock

Program Module #1

Command: SC
Display: blank
Input: Time of Day as Hour, Minute, and Second. This is a 24 hour clock so that 1:00 pm is represented as 13:00, 2:00 pm as 14:00,..., and 11:00 pm as 23:00. Input digits enter as left-most digit first, then second left most digit,..., rightmost digit last. Each field, Hours, Minutes, and Seconds is a two digit field. Any unfilled positions will be treated as zeros.
Type "PC" to erase value.
Type "+" to set clock value.
Action: Will automatically drop into the Display Clock Program.

Command: DC
Display: Current Value of the 24 Hour clock will be continuously displayed and updated every second. The least significant digit display the second, the next digit the tens of seconds, the next digit minutes,..., the most significant digit the tens of hours.

Hours	00 - 23	/ Minutes	00 - 59	/ Seconds	00 - 59	Value
	0	1	2	3	4	5	Position

Input: "GO"
Action: Return to PLEASE Command Decoder
or
Input: "+"
Action: Go to Set Clock Program

Notes and Comments:

1. Compare the two methods of inputting decimal information in Set Clock and Set Timer. In Set Clock the digits are input from left to right with no shifting, similar to a typewriter, for example. In Set Timer the digits are input from right to left with shifting, similar to typical calculator.

2. The Clock and the Timer will continue to run as long as Program Module #1 is running. Incrementing of the Clock and Timer is performed as a part of the major Executive Loop and occurs whether or not the Set Timer and/or Set Clock routines have been called. Values of the Timer are often used by PLEASE to generate pseudo random numbers for various games such as DAFFY, HILO, and so forth.

3. The highest value for a 24 Hour clock is 23:59:59. One second later the clock reads 00:00:00.

Notice
Billboard

Command: NO
Display: A message will be shown on the display in Alphabetic, Numeric, and/or Special Characters. Each six character segment will be displayed for about one second. After the entire message has been displayed it will repeat. The basic message is:

PLEASE
CAN I
HELP
?

Input: "GO"
Action: Return to PLEASE Command Decoder
or
Input: "+"
Action: Go to Billboard Program

Command: ƷB
Display: A message will be shown on the display in Alphabetic, Numeric, and/or Special Characters. Characters will enter the display at the rightmost position and will then be moved across the display to the left a about a rate of type of display. After the entire message has been displayed it will repeat. The basic message is:

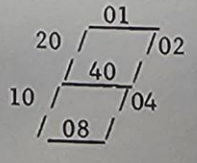
PLEASE CAN I HELP ?

Input: "GO"
Action: Return to PLEASE Command Decoder
or
Input: "+"
Action: Go to Notice Program

Notes and Comments:

1. You can write your own messages. The message starts at location 1DØ. Each memory location contains the code for the segments to turn on to represent a single character. Appendix A contains the hex values for the Alphabetic characters A to Z, the Numbers 0 to 9, and a few special characters. Or, invent your own characters. The message is terminated by a Hex FF code.

2. To create your own characters simply determine which segments are to be turned on. The Hex value for each segment is given in the diagram below.



Command: DA
Display: blank
Input: Four digit decimal number starting at leftmost digit and filling "address" portion of the display. Range 0000 to 9999.
Type "PC" to erase guess.
Type "+" to have guess evaluated.
Action: If your guess does not exactly match the answer selected by the computer, then an evaluation will be displayed in the two rightmost display locations. The first digit will be the number of exactly correct matches you have made, that is, the digit is correct and is in the right location. The second digit indicates how many of your digits were correct without regard to position. For example:

Answer	Guess	Evaluation	
1976	1234	11	1 digit in correct location 1 digit correct without location
1976	1467	13	1 digit in correct location 3 digits correct without location
1976	4567	02	0 digits in correct location 2 digits correct without location

When your guess exactly matches the answer selected by the computer, then the number of guesses it took you will be displayed as a flashing number in the last two digit positions of the display.

1976	1976	15	flashing = it took you 15 guesses to get the answer.

Input: "GO" at any time
Action: Give up and return to PLEASE Command Decoder
or
Input: "+" after solving DAFFY
Action: Start a new round of DAFFY.
or
Input: "+" after an incorrect guess
Action: Clear old guess and get next guess.
or
Input: "PC" during input of guess
Action: Erase guess without having it evaluated or counted as a guess.

Notes and Comments:

1. Where does DAFFY get its answer? From the millisecond timer.

2. DAFFY is the PLEASE version of Mastermind which has been written up in several journals and other publications. The PLEASE version was written from scratch without "borrowing" from any of the other versions.

Command: SS

Display: The three leftmost display positions are used to display the Universe, which for Shooting Stars consists of a three-by-three array of "Stars". Initially, only the center star is in existance. The fourth position of the display is used to show your current shot, that is the number of the star you are shooting at. The last two display locations maintain a count of the number of shots you have taken. The initial display looks like:

```
. . .
. * .   where the * is a lit segment.
. . .
```

Input: Type number of star you wish to shoot. Stars are numbered as the bottom three-by-three section of the keyboard:

```
8 9 A
4 5 6
0 1 2
```

You may only shoot an existing star, that is one which is currently lit. Shooting a non-existant star will cause a question mark "?" to be displayed in the current shot display location, but will not be counted as a shot. A valid star shot will cause all stars in the domain of that star to vanish if lit, or to become lit if currently dark. The domain of each star is defined as follows:

```
. . .   . . .   . . .   8 . .   . 9 .   . . A   8 9 .   8 9 A   . 9 A
4 5 .   . . .   . 5 6   4 . .   4 5 6   . . 6   4 5 .   . . .   . 5 6
0 1 .   0 1 2   . 1 2   0 . .   . 1 .   . . 2   . . .   . . .   . . .
```

The object of the puzzle is to go from the initial state of only the center lit to the state where every star except the center is lit:

```
FROM:   . . .      TO:   * * *
        . * .            * . *
        . . .            * * *
```

Since in the initial state only star #5 is lit, your first valid shot must be at star #5.

Input: "+" (after selecting star number)
Action: Cause your current shot to be evaluated, the Universe modified, and the count to be incremented. If your shot is invalid, a question mark is displayed.

Input: "+" (after shot has been scored)
Action: Setup for next shot. Clear old shot number.

Input: "GO"
Action: Give up and return to PLEASE Command Decoder.

Input: "PC"
Action: Abort Current Shot without having it count.

Notes and Comments:

1. The optimal solution to the Shooting Stars puzzle requires eleven shots.

2. If you manage to wipe out all the stars in the Universe you lose, and will be informed by question marks in the count field of the display.

3. My first encounter with Shooting Stars was through an article by Willard I Nico, Delta t, 11020 Old Katy Rd., Suite 204, Houston Texas 77043, which appeared in the May 1976 issue of BYTE pages 42 through 49. PLEASE uses a modification of his "MASKTAB" which is used to test shots, map their effects and so forth. The rest of the code is unique to PLEASE. The table modification consisted of selecting a different set of position codes which made converting the Universe into the display segments for the KIM-1 display an easy task.

4. If you really get frustrated, can not figure out (or luck out) the solution, and if even your best friends won't tell you, then send a self-addressed, stamped envelop to me and I will supply the answer (which I got from a friend, to be perfectly honest!)

HiLo Number Guessing Game Program Module #2

Command: HI
Display: blank
Input: Type two digit decimal number. Leading zero, if any, must be typed. Range of numbers is 00 through 99. The computer has selected a number within this range. It is your task, Jim, if you and the Mission Impossible...whoops, wrong show. It is your task to guess the computers number. On each of your guesses the computer will tell you if your guess was high (HI), low (LO) or correct (flashing number).
Input: "+"
Action: Get ready for next guess.
or
Input: "GO"
Action: Return to PLEASE Command Decoder

Notes and Comments:

1. This game is included primarily for the kiddies. My own children, ages almost four and almost 6, really enjoy playing with the KIM-1, and through HILO are learning their numbers, both the single digits required for inputting their guesses, and the higher numbers which make up the answer.

2. HILO is written entirely in basic PLEASE functions. It can be easily modified to work with three or four digit numbers, or could be fixed to work with hexidecimal numbers.

Tipsy

Command:	TI
Display:	blank
Input:	"+"
Action:	Computer will select a pseudo random number and display it. The number is decimal, four digits, and in the range 0000 to 9999. The number will be displayed for two seconds. The display will then be blanked for one second. When two dash characters appear in the rightmost two digit positions of the display, the computer is ready to accept your answer.
Input:	Four digit decimal number and "+"
Action:	Digits will be displayed as they are typed in. At the plus input the computer will evaluate your answer. If it is correct, then the time it took you to answer, in tenths of a second, will be displayed. If your answer is incorrect or if you took more than ten seconds, then two question marks will be displayed.
Input:	"+"
Action:	Restart TIPSY with a new random number
or	
Input:	"GO"
Action:	Return to PLEASE Command Decoder.

Notes and Comments:

1. You may erase your answer and try again using the "PC" key. This will erase the digits you have typed, but the ten second clock is still running until you press the "+" key.

2. TIPSY is patterned after the "drunk" test which was part of an article "KIM-1 Microcomputer Module" by T. E. Travis in Microtrek, August 1976, pages 7 through 16. This article was very helpful in clarifying a number of important points about the operation of the KIM which are not well documented in the KIM-1 Manual, and it provided source listings for such useful operations as refreshing the display, getting a character from the keyboard, and so forth.

Decimal/Hex Conversion
Hex/Decimal Conversion

Command: DH
Display: Blank
Input: Type the decimal number that you wish converted. Leading zeros are not required. The numbers typed will appear in the rightmost display position and all previous numbers will be shifted one position to the left. The range of valid decimal numbers is 000000 to 999999. The current input may be erased by typing a "PC", or you can just keep typing until you get the correct value entered as the numbers will keep shifting. Terminate the input by typing "+".
Action: Decimal value in display will be replaced by it hexidecimal equivalent.

Input: "+"
Action: Restart Decimal/Hex conversion routine
or
Input: "GO"
Action Start Hex/Decimal conversion routine.

Command: HD
Display: Blank
Input: Type the hexidecimal number that you wish converted. Leading zeros are not required. The range of valid hex numbers is 000000 to F423F. A value greater than F423F will cause all digit positions to be filled with question marks. Input is terminated by "+" or may be erased by "PC".

Input: "GO"
Action: Restart Hex/Decimal conversion routine.
or
Input: "+"
Action: Start Decimal/Hex conversion routine.

KIM-1/6502 Information

Articles about the KIM-1 and the 6502 have appeared in many of the Club Newsletters as well as in the national computer hobbyist magazines. Two publications which are devoted to the 6502 and related products are:

MICRO - The 6502 Journal, P.O. Box 3, S Chelmsford, MA 01824. As the name implies, this is devoted to the 6502. It contains articles which describe the various 6502 based systems, tutorial articles on the workings of the hardware and software, announcements of new products, and so forth. It is published by the creators of this PLEASE package. Subscription is $6.00 per year for six bi-monthly issues (USA). Others write for rates. The first issue was published in October/November 1977.

KIM-1/6502 User Notes, c/o Eric C. Rehnke, 109 Centre Avenue, W Norriton, PA 19401, also is dedicated to KIM-1 related information. The subscription is $5.00 for 6 issues. It started publication in September 1976. Back issues are (have been) available.

"The FIRST BOOK of KIM" contains alot of material from the first six issues of the KIM-1/6502 User Notes, plus additional tutorial materials. It is available from: ORB, P.O. Box 311, Argonne, IL 60439 for $9.50 including postage in the US.

Command:	AS
Display:	blank
Input:	Type first decimal value, range 000000 to 999999. Leading zeros are not required. Terminate input with "+".
Action:	First number is stored away.
Display:	blank
Input:	Type second decimal value, range 000000 to 999999. Type "+" to add values. Type "DA" to subtract values.
Action:	Second value will be added or subtracted from the first value.
Display:	The result will be displayed. If the result would be greater than 999999 or negative the second value will be flashed to indicate an error condition.
Input:	"GO"
Action:	Return to PLEASE Command Decoder
or	
Input:	"+"
Action:	After valid operation: Accept new input to combine with the current total to provide a "chained" operation. After invalid operation: Clear total and accept new values.

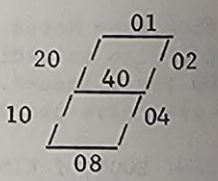
Notes and Comments:

1. Typing "PC" will erase the input and permit a new number to be entered.

Character Generator Table

Char.	Upper	Lower	Char.	Upper	Lower
A	77		U	3E	1C
B		7C	V		
C	39	58	W		
D		5E	X		
E	79		Y	6E	
F	71		Z	5B	
G	3D	6F			
H	76	74	Ø	3F	
I	30		1	06	
J	1E		2	5B	
K			3	4F	
L	38	06	4	67	
M			5	6D	
N	37	54	6	7C	
O	3F	5C	7	07	
P	73		8	7F	
Q		67	9	6F	
R		50			
S	6D		?	53	
T	07	78	-	40	

Notes: Some characters simply can not be made with the seven segment LED. One of the reasons for naming this demo package "PLEASE" was that the name looks real good on the display!



React

Command:	RE
Display:	blank
Input:	Type any character to start the test.
Action:	Test will be started.
Display:	All zeros will be displayed for a random period of time between 0.1 and 9.9 seconds in duration. After this time the display will be blanked.
Input:	Type any character as quickly as possible.
Action:	Time taken to type a character after the display was blanked will be calculated.
Display:	Time taken to react will be shown. The least significant digit displays milliseconds, the next digit hundredths of a second,..., and the most significant digit hundreds of seconds (in case you are taking a coffee break when the display goes blank).
Input:	"+"
Action:	Start new reaction time test.
or	
Input:	"GO"
Action:	Return to PLEASE Command Decoder.

Notes and Comments:

1. Your reaction time will depend on a number of factors. After seeing how fast you can be with total concentration, try different conditions such as:

   Counting backward from 100
   Reciting the alphabet backwards
   Singing
   Talking to someone

2. If you get 000003 for a time, it means that you pressed the key before the display went blank. Sorry.

The Last Word

I have worked very hard to make PLEASE a quality package. Since I did not have access to any sort of assembler, it has taken a tremendous amount of time to put this package together. I have tried to provide a good, clean set of documentation. My labors are justified if two events occur: first, that you and other users of PLEASE are entertained, educated, and perhaps challenged to do even greater things with your "humble" KIM-1 system, and, second, that you and other computer hobbyists permit me to obtain some financial return for my efforts by <u>not</u> permitting others to make copies of the PLEASE documents and cassette tapes. I have priced everything low so that no one would be forced to "rip-off" his copy due to an inability to pay. If, however, there is someone who can not afford to purchase PLEASE even at the low price, then please contact me. I will arrange some swap or exchange or something.

Command Summary Chart

Command	Purpose	Module	Page
ST	Set Millisecond Timer Initial Value	#1	6
DT	Display Current Value of Millisecond Timer	#1	6
SC	Set 24 Hour Clock Initial Value	#1	7
DC	Display Current Value of 24 Hour Clock	#1	7
NO	Display Notice at Six characters per frame	#1	8
BB	Display Notice in Moving Billboard fashion	#1	8
DA	Daffy: A Sophisticated Number Guessing Game	#1	9
SS	Shooting Stars Puzzle	#2	10
HI	HiLo: A Simple Number Guessing Game	#2	11
TI	Tipsy: An Intoxication Tester	#3	12
DH	Decimal to Hexidecimal Conversion	#4	13
HD	Hexidecimal to Decimal Conversion	#4	13
AS	Add/Subtract Calculator	#5	14
RE	Reaction Time Tester	#5	15

"GO" In Command Decoder: Execute Command
In Program (generally): Return to Command Decoder
"+" In Program: Execute Next Program Step
"PC" Always: Clear Current Input from Display
"DA" In Add/Subtract: Subtract
"RS" Always: Interrupt and Go To KIM Monitor

	GO AD	ST DA	RS PC	+	GO AD	ST DA	RS PC	+	
KIM	C	D	E	F	r	S	t	Y	PLEASE
Keyboard	8	9	A	B	L	n	o	P	Keyboard
	4	5	6	7	E	F	H	I	Alpha-Mode
	Ø	1	2	3	A	b	c	d	

Some Important Numbers

ØØF1	Status Byte: Must be set to ØØ when loading from tape.
17F9	Tape ID Number: Must be set to ID Number of tape segment being requested, or to ØØ for next segment on tape.
1873	Tape Input Start Address: Set Address and "GO"
ØØØØ	Tape Read Correctly Indicator.
FFFF	Tape Read Incorrectly Indicator.
17FA	"ST" Interrupt Vector: Must be set to ØØ to enable "ST".
17FB	"ST" Interrupt Vector: Must be set to 1C to enable "ST". When "ST" is enabled, Single Step Mode is also enabled.
178Ø	PLEASE Start Address: Initiate PLEASE and Go To Decoder.

617/256-3649 Where to call if a real problem occurs.